Lab Test Report

A Comprehensive BLI Laboratory Evaluation | SEPTEMBER 2010

ASIA PACIFIC EDITION

Kyocera FS-1120D

30 PPM Laser Printer

Reliability	Excellent
Administrative Utilities	Very Good
Feedback to Workstations	Very Good
Ease of Network Setup	Very Good
Print Drivers	Good
Applications Compatibility	Excellent
Print Quality	Good
Print Productivity	Very Good
Ease of Use	Very Good
Feature Set	Good
Security Features	Not Rated
Environmental Features	Not Rated
Toner Yield	Good

BLI RECOMMENDATION

A very good overall performer, the 30-ppm Kyocera FS-1120D demonstrated flawless reliability in BLI's two-month evaluation, completing its 10,000-impression durability test without a single misfeed or requiring a service of any kind. Suitable for small and medium-size workgroups, this device proved very easy to use and manage. Kyocera Command Center provides users with very good feedback regarding device status, paper size and paper and toner supplies, while KMnet Viewer allows administrators to assign specific alerts to different recipients. In addition to a low cost per page, the FS-1120D offers above average productivity from the PCL driver, although productivity from the PostScript driver was below average when compared with laser models in this speed range. Output produced by this model was good overall with dark and fully formed characters. BLI highly recommends the FS-1120D for small and medium-size workgroups with print volumes of up to 2,000 impressions.

Test duration: Two months, including a 10,000-impression durability test.

Maximum monthly duty cycle: Up to 20,000 impressions.

Manufacturer's recommended monthly volume: Up to 20,000 impressions.

BLI's recommended monthly volume for optimum performance: Up to 2,000 impressions.

More information on the Kyocera FS-1120D is available through bliQ (www.buyerslab.com/bliQ).

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STRENGTHS

- Highly reliable—flawless durability performance
- Very low cost per page
- Faster than average first-print times for most file types tested
- KMnet Viewer allows alerts for specific events to be assigned to different recipients, on a device-by-device basis or across an entire group of devices
- Kyocera Command Center provides users with very detailed feedback information
- Kyocera`s PRESCRIBE PDL offers custom programming features for specialized printing
- Pop up messages, icons and audible alerts keep users well informed about device status and error conditions
- Above average paper handling through the bypass tray
- RAM Disk feature allocates a portion of RAM for form printing and storage
- Above average maximum memory capacity
- Standard security features include IPsec, IP filtering, SSL/TLS, SNMPv3, 802.1x authentication and IPv6 support
- Kyocera's ECOSYS technology employs long-life consumables to minimize total cost of ownership and environmental waste

WEAKNESSES

- Above average amount of banding and graininess visible throughout the halftone pattern; more than average toner overspray and stair-stepping in diagonal lines; below average separation of closely spaced fine lines
- Below average job stream efficiency from the PostScript (KPDL) driver
- Each e-mail alert must be set up separately, which is more time consuming than combining set-up alerts
- Loading new cartridges is not easy as the locking mechanism is very tight

TEST RESULTS AND OBSERVATIONS

+, — and ○ represent positive, negative and neutral attributes, respectively.

△ RELIABILITY — EXCELLENT

+ The Kyocera FS-1120D is certified highly reliable by BLI, completing a 10,000-impression durability test without any misfeeds and no service calls required.

PMs/Malfunctions	Service Required	Meter Count (Impressions)	Impressions Between Service
Meter Count (Beginning of Test)		0	
End of Test Period		10,000	
Total Misfeeds/Misfeed Rate	0/Not applicable		
Total Service Calls	0		

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ADMINISTRATIVE UTILITIES

VERY GOOD

+ Kyocera's administrative utility suite includes KMnet Viewer, Printer Status Monitor and Kyocera Command Center, the embedded Web page.

+ KMnet Admin is a unified solution for network device management for Kyocera and compatible network printing devices. The utility allows the administrator to view page count and status, and view and configure alerts for groups of devices. Administrators can also access detailed information on individual devices such as amount of toner remaining, configuration settings and event logs.

+ KMnet Viewer enables device discovery and management of all printers and MFPs on the network, including Kyocera and non-Kyocera models. The utility allows administrators to sort devices by name or IP address and specify which information on monitored devices is shown.

+ KMnet Viewer allows administrators to create groups of products based on reporting or error notification requirements.

+ Within a "report group" on KMnet Viewer, an administrator can receive reports via e-mail at defined time intervals outlining a variety of device statistics, including printed page volumes and consumable levels.

+ An office map can be downloaded and each device can be dragged and dropped to its specific location, allowing for faster navigation for technical support.

+ The embedded Web page provides administrators with information about the FS-1120D such as IP address and network status and allows them to change settings, view status and monitor toner and paper supplies.

+ The embedded Web page allows administrators to send e-mail alerts to three recipients for error conditions, including when there's a jam, the cover is open, and toner or paper needs to be replenished.

FEEDBACK TO WORKSTATIONS

VERY GOOD

+ The Kyocera Command Center provides users with a very good level of detail regarding the FS-1120D, including device status, paper size, remaining paper and toner supplies.

○ The pop-up status monitor provides a link to the Kyocera Command Center as well as a colour-coded icon that resides on the Windows toolbar and an audible alert for events such as cover open, paper jam, add paper/toner and printing/print completed.

+ KMnet Viewer allows administrators to assign specific alerts or events to different recipients, either on a device-by-device basis or across an entire group of devices.

— Each alert must be set up separately, which is more time consuming than combining set up alerts.

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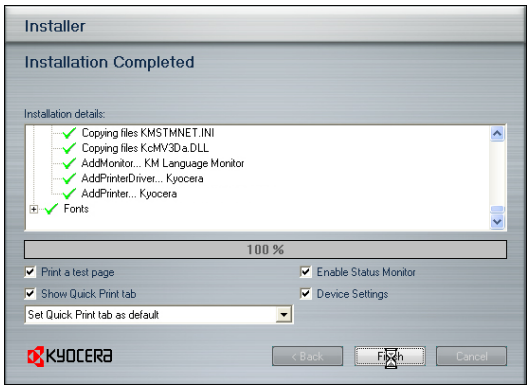
EASE OF NETWORK SETUP

VERY GOOD

+ Only one person is needed to lift the FS-1120D out of its box, due to its compact size and weight. Users then remove packing tape. The device ships with a starter catridge that is rated to yield 1,000 impressions. The unit comes with its cartridge pre-installed, and users must remove a packing seal before it can be used.

+ Installation of the drivers is highly automated; users will be up and running in minutes. The CD, which contains the drivers, auto-launches upon insertion in the drive. When selected, the install software option launches a menu-driven installation routine. It takes just eight clicks to install the drivers.



Driver Installation (U.S. model pictured)

+ The IP address is automatically assigned using DHCP and the port is created automatically during installation.

○ Administrators can't clone settings from one device to another, and they can't simultaneously install the drivers at multiple workstations on the network. Kyocera reports that SMS packages can be prepared on request for customers, facilitating fleet distribution and setup of drivers across the network.

PRINT DRIVERS

GOOD

○ The FS-1120D ships with Kyocera's KX driver for Windows 98, NT 4.0, XP and Vista operating systems, as well as Mac OS X. Other supported environments include Novell NPDS and Linux. The KX driver combines three drivers in one: PCL XL (PCL 6 emulation), PCL 5e and KPDL (the company's PostScript emulation). The KX driver facilitates a more streamlined installation procedure and uses fewer resources on the network.

+ All the features required for a typical print job are accessible on the main screen, eliminating the need to navigate multiple tabs.

+ The layout of the PCL and PostScript drivers is the same, which makes use easier for those who switch between them.

○ The drivers offer a good feature set, including booklet printing, collation, N-up printing, quantity selection up to 999, reduction/enlargement from 20% to 500%, ability to save settings and custom watermarks.

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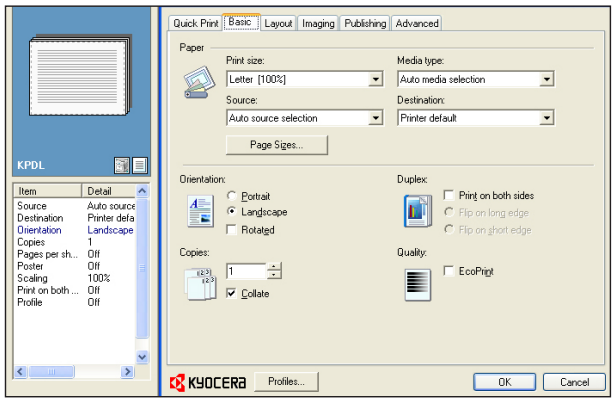
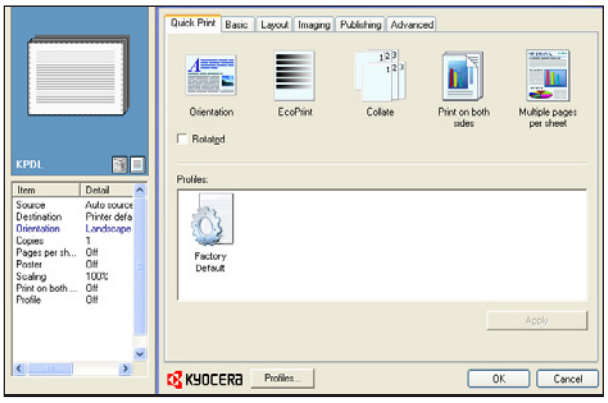


KX driver Basic Tab (U.S. model pictured) (U.S. model pictured)



KX driver Quick Print Tab (U.S. model pictured)

— Note that users cannot switch between emulations from within applications. They must minimize or close the application and then open the driver properties screen to switch from one driver to the other. Kyocera recommends that users who regularly switch emulations install the driver twice with different configuration settings—one for PCL and one for KPDL for the PostScript emulation.

+ The well-designed drivers are graphical, including a summary list of features, as well as a graphical display that indicates which paper trays to use and how to view different document types. A "Quick Print" tab in both drivers enables profiles to be stored for future use.

+ File size remains the same when printing multiple sets, regardless of whether collate is selected from the properties screen of the driver or from the print screen within an application.

+ The PCL XL and KPDL drivers feature PRESCRIBE, Kyocera's page design and control language, which enables graphics, logos and forms (including multi-part forms) to be created independently of the system and then saved and updated on the unit.

Kyocera FS-1120D Print Driver Feature

Features	PCL XL	PostScript 3
Auto Feature/Device Detection	Yes	Yes
Booklet Printing	Yes (no folding or stapling)	Yes (no folding or stapling)
Collate Sets	Yes	Yes
Max Paper Sources per Job	2	2
Mirror Image	No	No
Negative Image	No	No
N-up Printing	2 to 25	2 to 25
Overlays	No	No
Paper Gauge	No	No
Print and Hold	No	No
Proof Print	Yes	Yes
Quantity Selection	Up to 999	Up to 999
Reduction/Enlargement	20% to 500%	20% to 500%
Resolution Modes (dpi)	300, 600, 1200	300, 600, 1200
Save Settings	Yes	Yes
Secure Print	No	No
Watermarks/Custom Watermarks	Yes/Yes	Yes/Yes

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APPLICATIONS COMPATIBILITY

EXCELLENT

+ No problems were experienced with any of the test files used in the applications compatibility tests. Units are tested for compatibility on the Windows XP platform with Microsoft Word 2000, PowerPoint 2000 and Excel 2000, as well as Adobe PageMaker 7.0, Photoshop 6.0 and Acrobat 8.0, using 25 application test files that contain text, graphics, halftone images, tables, etc., enabling BLI technicians to evaluate memory usage, file processing, font rendering and greyscale capability.

PRINT QUALITY

GOOD

Text, which exhibited an average amount of toner overspray, was rated above average for darkness and fully formed characters and competitive for sharpness and smoothness of curves and serifs. Line art, which displayed an average amount of stair-stepping in diagonal lines, was rated above average for circle formation and competitive for consistency of line thickness; however, when viewed under magnification an above average amount of toner overspray was visible and closely spaced fine lines did not remain distinct. Halftone pattern exhibited an above average amount of graininess and banding. Halftones were visible over a good range—from the 3% to 98% dot-fill levels—with distinct separation between most levels. Solids were rated average for darkness and consistency of coverage.

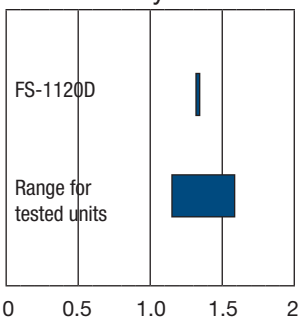
Text	Good
Line Art	Good
Halftone Pattern	Fair
Halftone Range	Good
Solids	Good

Print Density

Kyocera FS-1120D	1.32 to 1.35
Density for devices in this class tested to date	1.15 to 1.59

Measurements are based on four readings corresponding to four different solid black locations on the output. The higher the density reading, the darker the image.

Print Density



Visible Halftone Range

Kyocera FS-1120D	3% to 98%
Typical range for competitive devices	3% to 96%

The halftone test target contains blocks of increasing halftone dot-fill levels (1% to 100% in 1% increments).

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PRINT PRODUCTIVITY

VERY GOOD

+ The FS-1120D delivered first-print-out times that were faster than average for the PowerPoint, TIFF and PDF files tested, competitive for the JPG file and slower than average for the Word document.

○ When printing multiple sets, productivity is competitive in simplex mode and below average in duplex mode.

+ When using the PCL driver to print BLI's job stream, which replicates typical traffic in a multi-user environment, productivity is above average. In fact, efficiency is the highest for tested models in this range.

— Job stream productivity when using the PostScript driver is the lowest for competitive models. BLI technicians attribute this to the device pausing between each job.

○ First-page time from overnight sleep is competitive.

First-Print Time from Overnight Sleep Mode in Seconds

Kyocera FS-1120D	18.16
Average for devices in this class tested to date	20.66

Device sits idle overnight; a single-page black Word document is then sent. First-print time indicates the time it took to RIP, image and deliver the first page of the test document to the output tray.

First-Print Times in Seconds

Windows XP	Word	PowerPoint	Photoshop	Acrobat	Photoshop
File Type	Black Text	Colour Graphic/Text	Colour Graphic	Black Graphic/Text	Colour Graphic
File Extension	DOC	PPT	TIF	PDF	JPG
Pre-Raster File Size	114 KB	99 KB	20 MB	426 KB	248 KB
Post-Raster File Size	34.5 KB	98.7 KB	597 KB	563 KB	741 KB
First-Page Time	10.47	8.12	8.18	8.75	9.75
Tested Competitive Average	8.37	9.84	13.25	9.23	8.96

First-print time indicates the time it took to RIP, image and deliver the first page of the test document set to the output tray. Speeds were tested using the PCL driver at 600 dpi.

Kyocera FS-1120D's rated speed:
30 ppm

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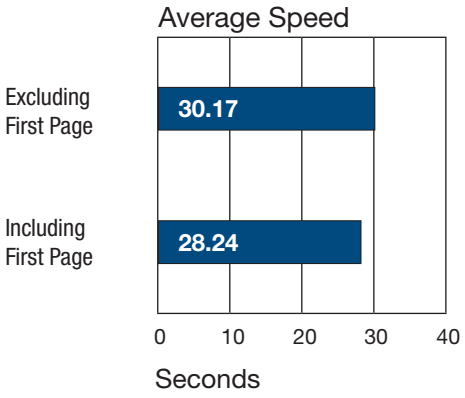
BLI's Tested Print Speeds



Print speed is tested using BLI's Monochrome Test Original (with 6% page coverage). The test page is printed in a quantity equal to double the vendor's rated print speed for the device in each mode tested (e.g., if the vendor's rated print speed is 20 ppm, 40 pages are printed). The FS-1120D's print speeds were tested at the default 600 dpi using the PCL XL driver.

Average Print Productivity

	SPEED IN PPM		PERCENT OF RATED SPEED	
	Kyocera FS-1120D	COMPETITIVE AVERAGE	Kyocera FS-1120D	COMPETITIVE AVERAGE
1:1	25.4	28.0	84.6	86.7
1:2	12.6	15.2	41.9	46.8

Efficiency is tested using a 10-page document in black mode. In print mode, the document is printed using the PCL XL driver at the default 600 dpi. BLI obtains the overall efficiency for each mode by averaging the efficiency ratings (derived by dividing the tested speed of the device by the rated speed and then multiplying by 100) for each run length (1, 5 and 10 sets).

Job Stream Evaluation

	SPEED IN PPM		PERCENT OF RATED SPEED	
	Kyocera FS-1120D	COMPETITIVE AVERAGE	Kyocera FS-1120D	COMPETITIVE AVERAGE
PostScript	4.6	12.0	15.4	36.35
PCL	26.9	22.75	89.6	74.21

BLI's job stream includes Word documents, Outlook e-mail messages, Excel spreadsheets, PowerPoint, HTML and Acrobat PDF files, totaling 19 pages. This test simulates the type of traffic a typical device might experience in a real-world, multi-user environment. All of the files are sent to the device as a group, at which time the stopwatch begins; timing ends when the last page of the last file exits the device. Job stream efficiency is determined by the percentage of the rated speed at which the device operates when producing real-world jobs. The closer the rate is to 100%, or if it exceeds 100%, the more efficient the device.

Problems encountered:
None

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EASE OF USE

VERY GOOD

+ BLI technicians found the control panel, which consists of just two hard keys plus an LED indicator dial to indicate toner and paper status, to be quite basic but easy to use. Pressing the “Go” key for more than three seconds provides device status; for example, if toner is empty the “Toner” light on the LED indicator flashes.

Kyocera FS-1120D Control Panel (U.S. model pictured)

○ Clear, graphical instructions on removing the toner cartridge are provided on the inside of the device’s front cover and a clear plastic panel above the cartridge enables users to see which toner cartridge is installed (and its part number) without lifting the lid or checking the user manual. However, toner cartridge removal can be messy as residue on the underside of the cartridge can spill on to documents. In addition, it was not easy to load new cartridges as the locking mechanism was very tight.

Toner cartridges are easily accessed on the FS-1120D and part numbers can be read without lifting the lid. (U.S. model pictured)

+ Misfeeds are easily removed by either opening the front panel and removing the developer unit, or by opening the rear panel, thus allowing access to the entire paper path. The drum is not exposed during removal.

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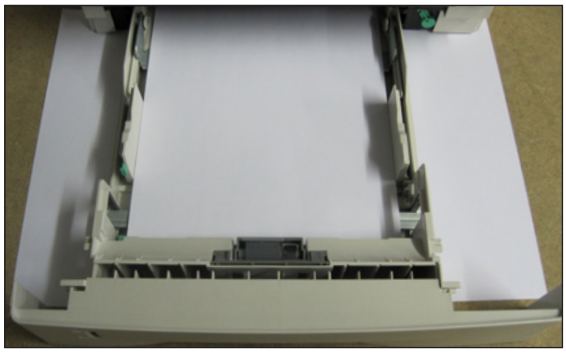
+ BLI technicians noted that adjusting the trays is easy, with a lever to adjust the paper length and sliding guides on each side that move in sync.



Adjusting the paper trays is very easy. (U.S. model pictured)

+ Ease of use at the desktop is also very good overall via the well-designed drivers.

△ **FEATURE SET** GOOD

+ Standard (32 MB) memory capacity is competitive and maximum (544 MB) memory capacitiy is above average compared with A4-size colour laser/LED printers in this speed range and class.

— Standard (300 sheets) paper capacitiy is competitive and maximum (550 sheets) paper capacity is below average for the group.

○ The capacity of the bypass is competitive with the group.

+ Paper handling capability is competitive from the drawers (60 to 120 gsm) and above average through the bypass (60 to 220 gsm).

○ Automatic duplexing is standard, as with the majority of models in the group.

○ The device offers a variety of optional interfaces, including a wireless interface.

+ Kyocera`s PRESCRIBE PDL offers custom programming features for specialized printing.

+ Kyocera's RAM Disk option allows a portion of the device's RAM to be treated like a hard disk to facilitate job storage without purchasing an additional hard drive; as RAM is volatile memory it can only retain data while connected to a power supply or a device.

+ KM-NET for Direct Printing is a user-friendly utility allowing for simple submission of PDF files to the device without the need to open the PDF. Users can choose one or multiple PDF files and submit them to the direct print workflow using drag-and-drop, right click or browse as the file submission selection process. Users can also set up

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print profiles, which further simplifies the submission process. This feature is ideal for users operating the device as a short run, print on demand resource.

- Kyocera's ECOSYS technology employs long-life consumables to minimize total cost of ownership and environmental waste.

SECURITY FEATURES

NOT RATED

Administrator password length (characters)	INA
Authentication	
Network user authentication	INA
Windows	INA
Novell NetWare NDPS	INA
LDAP authentication	INA
802.1x wireless authentication	Yes
Kerberos protocol support	INA
Authentication via department or user ID codes that are registered on the machine	INA
Number of codes	INA
Restrict usage of colour	Not Applicable
Restrict usage of other features	INA
Authenticated printing	INA
Common Criteria Certification	No
Control panel lock/disablement	INA
Digital user signature	INA
Encrypted PDF mode/encrypted scanning	INA
Encrypted secure print	INA
Hard drive encryption	No
Hard drive lock	No
Hard drive overwrite	No
Max number of overwrites after every job	N/A
Overwrite method	N/A
IP address filtering	Yes
IPsec	Yes
Job logs (e.g., activity monitoring, compliance auditing)	INA
MAC address filtering	INA
Password-protected mailboxes	No
Password-protected Web page	INA
Port disablement	INA
Removable hard drive	No
Secure print	No
Secure Sockets Layer (SSL)	Yes
SNMPv3 support	Yes
Third-party security features	INA
Transport layer security	Yes
Unauthorized copy prevention (secure watermark)	INA
USB block	INA
Additional security features	

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ENVIRONMENTAL FEATURES

NOT RATED

Specified capable of running 30% post-consumer recycled paper	Yes
Specified capable of running 50% post-consumer recycled paper	Yes
Specified capable of running 100% post-consumer recycled paper	Yes
Instant/Quick Fusing	No
Duplexing	Yes
Toner-save mode	Yes
Energy-save mode/modes	Yes
RoHS compliant	Yes
In-house environmental policy for this unit?	Yes
Percent of product made from previous devices	4.4%
Percent of product made from post-consumer materials	No
Percent of product made from pre-consumer materials	20%
Percent of product made from bio-based materials	No
Product designed for recycling (easily disassembled, no binding agents)	Yes
Please list types of items that can be recycled	Not seals, magnets, sponge.
Hardware remanufacturing program for this product	No
Toner cartridge recycling program for this product	No
Pre-paid label for return of toner cartridges/bottles for this unit	No
Toner recycling system	No
Ability to program features such as duplexing and auto shut-off over entire fleet	Yes
What tool can be used to do this?	Print settings command
Green packaging materials for the product	Yes
Green packaging materials for its consumables	Yes
Packaging materials used	Cardboard; pulp-mould cushion
Typically, who is responsible for getting rid of packaging materials after products are shipped to the customer location (e.g., customers, dealers, shippers)?	Dealers or customers
Eco-Label Certifications	
ENERGY STAR (after 7/1/09)	Yes (1.1)
Other	
Tested energy consumption levels of the device (watts):	
Ready/Idle	7.3
Energy-save	N/A
Sleep mode	4.4
During Printing	524.1
How fast can this product be programmed to go into the following modes (seconds):	
Ready/Idle	Immediately after warm-up
Energy-Save	N/A
Sleep mode	15 minutes (1-240 minutes)
Can the above settings be programmed by a walkup user?	No
First-print time out of sleep mode (seconds)	20 secs.
Emissions output from this device for the following substances (mg/h):	
Carbon Monoxide	0
Nitrogen Dioxide	0
Ozone	1.2
Styrene	0.065
Benzene	0.016
TVOC	6.9
Dust	0.86

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TONER YIELD

GOOD

— The tested toner yield of the FS-1120D's toner cartridges is the lowest for A4 laser/LED printers in this speed range tested to date.

○ Tested impressions per gram are competitive compared to models in this class tested to date.

+ In BLI's testing, all the cartridges tested exceeded their rated yield.

Tested Toner Yield (ISO 19752)

	Black
Manufacturer's Rated Toner Yield (Impressions)	2,500
COMPETITIVE AVERAGE	7,027
BLI's Tested Yield (Impressions)[1]	3,182
COMPETITIVE AVERAGE	8,313
Net Weight (Grams)	83.6
Impressions per Gram	38.05
COMPETITIVE AVERAGE	41.0
Manufacturer's Rated Drum Yield (Impressions)[2]	100,000
COMPETITIVE AVERAGE	34,167

[1] Based on BLI's testing of three high-yield print cartridges using the ISO 19752 toner yield test original.

[2] Some devices in the competitive group employ an all-in-one cartridge that includes the toner and drum in a single component. In those cases, rated toner yield is used as the rated drum yield in calculating the average.

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SUPPORTING TEST DATA

Test Environment

Testing was conducted under ambient conditions of 22°C (+/-2.7°C) and 45% RH (+/-10%); monitored daily by Dickson Seven-Day Temperature/Humidity Chart Recorder, in Buyers Lab's test facility at Unit 1 Station Industrial Estate, Wokingham, Berkshire RG41 2YQ. All products lab tested by BLI are powered by dedicated circuits that are protected by ESP (Electronic Systems Protection, Inc.) surge protectors to prevent transient power and communication disturbances from affecting equipment under test.

Test Equipment

BLI's dedicated test network, consisting of Windows 2007 server, Windows XP workstations, 10BaseT/100/1000 BaseTX network switches and CAT5e/6 cabling.

Test Duration

Products are tested for two months, three weeks of which consists of a durability test during which the product is run at half of its manufacturer-rated maximum monthly volume. BLI's daily test usage is designed to replicate real-world use over an eight-hour workday, and as such includes a mix of various-size documents, simplex and duplex modes, and a mix of short, moderate and long run lengths, and on/off cycles, throughout the day.

Tested Configuration

Kyocera FS-1120D base unit, plus 512 MB of RAM.

Test Procedures

The test methods and procedures employed by BLI in its lab testing include BLI's proprietary procedures and industry-standard test procedures, including a BLI-developed variation of ASTM's 1318-90 Test Method for Determination of Productivity using Electrostatic Copy Machines. In addition to a number of proprietary test documents, BLI uses an industry-standard KATUN test original for evaluating black image quality and test suites from Quality Logic to evaluate applications compatibility. In addition to a visual observation, gamut size and stability are tested using a 1,400 colour test target, which is read using an EFI ES-1000 colour spectrophotometer and assessed using Chromix ColorThink Pro v3.0 software. In addition, density of black and colour output is measured using an X-Rite 508 Densitometer.

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Certificate of Reliability

Awarded to

KYOCERA MITA CORPORATION

for the performance of the

Kyocera FS-1120D

in BLI's in-house durability test.

Anthony F. Polifrone
Managing Director

September 2010
Date

This is to certify that when subjected to an approximately 10,000-impression Buyers Lab durability test in a networked environment, the Kyocera FS-1120D proved to be a highly reliable product.

BUYERS LABORATORY INC.

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